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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/658,919	09/10/2003	John R. Grassi	GISZ 2 00033	4064

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EXAMINER

LIN, ING HOUR

ART UNIT	PAPER NUMBER
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1725

DATE MAILED: 04/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/658,919

Applicant(s)

GRASSI ET AL.

Examiner

Ing-Hour Lin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10 September 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-42 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 9/03, 3/04, 12/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 20 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 20, "said pattern or core box" lack antecedent basis.

### *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 19-21, 25, and 29-31 are rejected under 35 U.S.C. 102(e) as being anticipated by Pineda et al.

Pineda et al (col. 2, lines 58+) teach the claimed molding method, a water dispersible mold and method of investment casting for metal by using the mold, comprising the use of a water-soluble binder including phosphate and silica sand having lower heat diffusivity than metal for the purpose of coating a pattern and forming a water dispersible mold and casting metal by a investment casting method (col. 5, lines 39+); and teach the use of dropping the mold into water (col. 6, lines 28+) to create a heat differential to crack a portion of the mold. Further, Pineda et

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al (col. 6, lines 66+) teach the use of controlling and reducing binder and increasing silica sand or filler for the purpose of making the investment softer and easier to remove it from the casting metal. in order to remove or crack a portion of the water dispersible mold from the casting.

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

### ***Double Patenting***

7. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

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A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

8. Claims 36 and 42 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 16 and 22 of copending Application No. 10/614,601. Although the conflicting claims are not identical, they are not patentably distinct from each other because the processing steps in claims 36 and 42 including “contacting said at least a part of said mold with a solvent” and “removing step” in this application are physically equivalent to the steps in claims 16 and 22 of copending Application No. 10/614,601.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

9. Claims 22-24, 26-28 and 32-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pineda et al in view of either JP 61245938 or Eldemallawy et al.

Pineda et al fail to teach the use of an amount of heat resistant and porous or micro-sphere oxide such as pumice or perlite. However, either JP ‘938 (see abstract) or Eldemallawy et al (col. 7, lines 7+) teach the use of an amount of heat resistant and porous or micro-sphere oxide such as pumice or perlite for the purpose of improving casting shaping quality and the mold removability. It would have been obvious to one having ordinary skill in the art to provide Pineda et al the use of an amount of heat resistant and porous or micro-sphere

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oxide such as pumice or perlite as taught by JP '938 or Eldemallawy et al in order to effectively improve casting shaping quality and the mold removability.

10. Claims 1-4, 7-9, 12, 15-18, 36 and 39-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pineda et al in view of Carter et al.

Pineda et al fail to teach the use of rapid cooling the molten metal. However, Carter (col. 2, lines 47+) teaches the use of rapid cooling such as simultaneous molten metal pouring and immersion cooling for the purpose of forming a fine grain and reducing oxidation pitting for the casting. It would have been obvious to one having ordinary skill in the art to provide Pineda et al the use of rapid cooling the molten metal as taught by Carter et al in order to reduce cycle time of casting and refine the grain size.

11. Claims 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pineda et al in view of Carter et al and further in view of either JP 61245938 or Eldemallawy et al.

Pineda et al in view of Carter et al fail to teach the use of an amount of heat resistant and porous or micro-sphere oxide such as pumice or perlite. However, either JP '938 (see abstract) or Eldemallawy et al (col. 7, lines 7+) teach the use of an amount of heat resistant and porous or micro-sphere oxide such as pumice or perlite for the purpose of improving casting shaping quality and the mold removability. It would have been obvious to one having ordinary skill in the art to provide Pineda et al in view of Carter et al the use of an amount of heat resistant and porous or micro-sphere oxide such as pumice or perlite as taught by JP '938 or Eldemallawy et al in order to effectively improve casting shaping quality and the mold removability.

12. Claims 10-11, 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pineda et al in view of in view of Carter et al and further in view of either Sahari or Conroy et al.

Pineda et al in view of in view of Carter et al fails to teach the use of controlling the dose of binder or the use of water nozzle. However, Sahari (col. 6, lines 24+) teaches the use of nozzles (water jet, water-steam jet) and submerging the mold into water for the purpose of cooling and removing casting from the re-using the binder agent. Conroy et al (col. 4, lines 19+) teach the use of nozzles 20 and flow rate and pressure of fluid including water and surfacatant for the purpose of removing cores from castings. It would have been obvious to one having ordinary skill in the art to provide Pineda et al in view of in view of Carter et al the use of water nozzle as taught by Sahari or Conroy et al in order to control cooling the casting in the molten state and remove or crack the water soluble mold from the casting.

13. Claims 37-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pineda et al in view of Carter et al and further in view of Watts.

Pineda et al in view of Carter et al fails to teach the use of solidified shell having a molten metal core or using the shell as a chill. However, Watts (col. 8, lines 3+) teaches the use of solidified shell having a molten metal core or using the shell as a chill for the purpose of controlling cooling rate and microstructures of the casting. It would have been obvious to one having ordinary skill in the art to provide Pineda et al in view of Carter et al the use of solidified shell having a molten metal core or using the shell as a chill as taught by Watts in order to effectively control the cooling rate and microstructure of the casting.

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***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ing-Hour Lin whose telephone number is (571) 272-1180. The examiner can normally be reached on M-F (8:00-5:30) Second Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (571) 272-1171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*I.H.L.*

I.-H. Lin

4-6-05

KEVIN KERNS  
PRIMARY EXAMINER

*Kevin Kerns 4/15/05*